

What Is Claimed Is:

1. A computer system for providing high availability comprising:
 - an application level;
 - an operating system level supporting the application level; and
 - a firmware level supporting the operating system level, the firmware level including a microprocessor having a system management mode that functions independently from the operating system level, the system management mode being configurable to execute system management code to monitor each of the levels of the computer system and to correct malfunctions in the levels.
2. The computer system of claim 1, wherein the system management mode is configured to execute code in response to receipt of a system management interrupt.
3. The computer system of claim 1, further comprising:
 - a timer coupled to the firmware level and set for a duration,
 - wherein the timer triggers transmission of a system management interrupt after the duration has elapsed.
4. The computer system of claim 3, wherein the system management code stores state information concerning the application, the operating system and the firmware levels upon receipt of the system level interrupt.
5. The computer system of claim 4, wherein the system management interrupt is independently triggered by external events occurring in at least one of the application level, the operating system level, and the firmware level.
6. The computer system of claim 5, wherein the system management interrupt is triggered by a malfunction in at least one of the application level, operating system level, and firmware level.

7. The computer system of claim 6, wherein the system management code initiates a stateful rebooting of the computer using the saved information concerning the application, the operating system and the firmware levels.
8. The computer system of claim 6, wherein the system management code includes a diagnostic routine to determine the source of the malfunction.
9. A method for providing a stateful resetting of a computer system including a microprocessor that has a system management mode that functions independently of an operating system, the method comprising:
- storing state information concerning the computer system according to code executed in the system management mode on a regular basis;
 - detecting a malfunction in the computer system; and
 - triggering the system management mode to execute code to deliver the stored state information during resetting of the computer system to restore a state of the computer system prior to malfunction.
10. The method of claim 9 further comprising:
- setting a timer;
 - sending a system management interrupt after elapsing of the timer;
 - resetting the timer; and
 - storing the state information upon receipt of the system management interrupt.
11. The method of claim 10, wherein the timer is set for a short duration.
12. A method of providing high availability in a rack computer system including a microprocessor having a system management mode and including manually replaceable component cards, the method comprising:
- detecting initiation of manual removal of a component card;
 - storing state information concerning the component card according to code executed in the system management mode;

shutting off power to the component card being removed; and
delivering the stored state information to a replacement card to ensure
availability of the functions provided by the component card being removed.

13. The method of claim 12, further comprising:

before delivering the state information to the replacement card, determining
whether one of:

- i) a replacement card has been inserted to replace the removed
card, and
- ii) a pre-installed stand-by component can be used as a substitute
for the removed card.

14. A telecommunication system having high availability comprising:

a media gateway for converting between POTS voice traffic and IP voice traffic,
the media gateway including a processor having a system management mode that
executes code to monitor a state of the media gateway;

a signaling gateway for converting between POTS signaling traffic and IP
signaling traffic, the signaling gateway including a processor having a system
management mode that executes code to monitor a state of the signaling gateway;

a gateway controller coupled to the signaling gateway for receiving signaling
messages therefrom and determining IP routing addresses corresponding to
telephone numbers, the gateway controller including a processor having a system
management mode that executes code to monitor a state of the gateway controller;
and

a high availability system controller coupled to all of the media gateway, the
signaling gateway and the gateway controller, the high availability system controller
having policy and procedure code configured to execute when triggered by at least
one of the media gateway, the signaling gateway and the gateway controller in
response to at least one event.

15. The telecommunication system of claim 14, wherein, if a malfunction occurs, the high availability system controller is alerted from the state information provided by one or more components, and the policy and procedure code executes a diagnostic routine to determine a cause of the malfunction and initiates a power-down procedure for all malfunctioning components.

16. The telecommunication system of claim 15, wherein the policy and procedure code includes routines to activate replacement components to cover for malfunctioning components.

17. The telecommunication system of claim 16, wherein the policy and procedure code includes routines for rerouting voice and signaling traffic to maintain quality of service.